



BCD TO DECIMAL READOUT

TYPE

BIP-9201
BIP-9203

MINIATURE NUMERIC READOUT FOR AIRBORNE AND MOBILE EQUIPMENT

The BIP-9201 and BIP-9203 decoder/drivers provide decimal readout on a miniature rectangular NIXIE® tube, type B-4998, from 4-line, 8-4-2-1 binary coded decimal inputs. Solid state decoder circuitry accepts either Positive (BIP-9203) or Negative (BIP-9201) logic with logic level separations of 2.4V to 27V, and controls the selection of the NIXIE tube numeral elements. The units are non-latching in that it requires a continuously available BCD information input.

The modules feature low-cost high-density packaging, combining standard printed circuit techniques with low-cost welded sheet metal enclosures. Both units are potted to provide excellent shock and vibration capabilities).

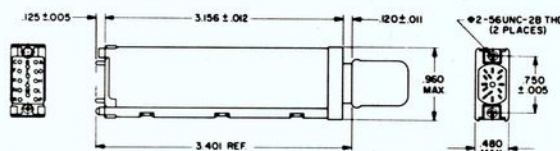
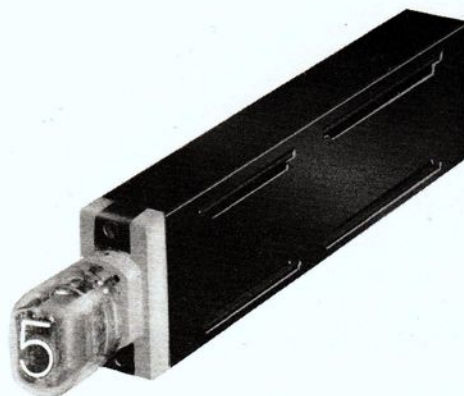


Figure 1. OUTLINE DRAWING

ELECTRICAL SPECIFICATIONS

INPUT REQUIREMENTS	BIP-9201 (Note 6A)		BIP-9203 (Note 6B)	
	TERMINAL F	TERMINAL K	TERMINAL P	TERMINAL L
4 bit (4 lines) 8-4-2-1 BCD	Note 5b	Note 5c	Note 5b	Note 5c
Logic Level Separation (Note 5a)	+2.4 to 27V	+2.6 to 27V	+2.4 to 27V	+2.6 to 27V
E_0 = Logic "0" (Notes 9 and 11)	+2.8 to 25V	+3.5 to 25V	-2.0 to +0.4V	-2.0 to +0.9V
E_1 = Logic "1"	-2.0 to +0.4V	-2.0 to +0.9V	+2.8 to 25V	+3.5 to +25V
INPUT CURRENT				
Logic "0" Present	10 μ a max. (Note 8)		0.3 to 1.5 ma (Note 7)	
Logic "1" Present	0.3 to 1.5 ma (Note 7)		10 μ a max. (Note 8)	
POWER REQUIREMENTS (Note 2)				
DC Supply Voltage (Note 4)	+200 Vdc $\pm$ 10V		+200 Vdc $\pm$ 10V	
DC Supply Current	3.5 ma nom.		3.5 ma nom.	

MECHANICAL CHARACTERISTICS

Connector 14 pin rectangular socket base
Receptacle SR-120 (Figure 4) (Note 3)
Mounting Diagram Figure 3
Weight (with tube) 3.7 oz. nom.
Outline Drawing Figure 1

Terminal Connections ... Table 1
Temperature (Note 10)
Operating -20°C to +85°C
Non-operating -55°C to +85°C



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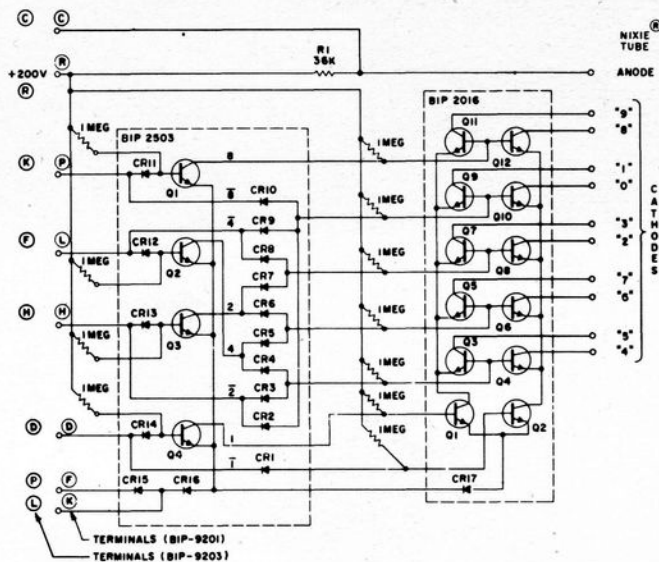


Figure 2. SCHEMATIC DIAGRAM (Note 4)

TERMINAL		INPUT
BIP 9201	BIP 9203	
F	P	Common (Note 5a)
P	K	BCD 8*
L	F	BCD 4*
H	H	BCD 2*
D	D	BCD 1*
A	A	Not Used
B	B	Not Used
E	E	Not Used
J	J	Not Used
M	M	Not Used
R	R	+200 Vdc (Notes 2 & 4)
K	L	Common (Note 5a)
N	N	Not Used
C	C	Anode

* BIP-9201: 8, 4, 2, 1
BIP-9203: 8, 4, 2, 1

Table 1. TERMINAL CONNECTIONS

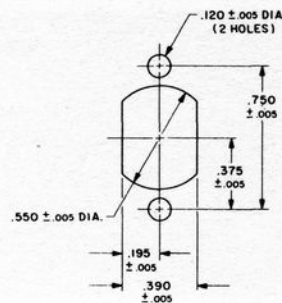


Figure 3. MOUNTING DIAGRAM

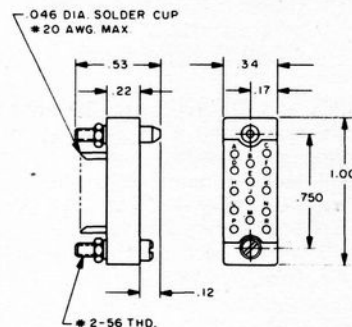


Figure 4. RECEPTACLE SR120 (Note 3)

NUMERAL	CODE			
	8*	4*	2*	1*
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1

* BIP-9201: 8, 4, 2, 1
BIP-9203: 8, 4, 2, 1

Table 2. TRUTH TABLE

NOTES

1. NIXIE tube is included as part of module.
2. The +200V supply is referenced to the common terminals F or K (BIP-9201), P or L (BIP-9203) which ever is used.
3. Receptacle SR-120 is not part of the module and must be ordered separately.
4. For B+ voltages higher than +200Vdc, a resistor (R) must be added in series with R₁ (see schematic diagram) so that the voltage at pin R is 200V ± 10V. For example, to operate at 300 Vdc, R is calculated by dividing the voltage difference (300-200) by the nominal current 3, 5 ma. R is therefore 28K.
- 5a. Only one of the two common terminals (F & K) (P & L) is used in any given application.
- 5b. Voltages given are referenced to terminal F (BIP-9201), terminal P (BIP-9203).
- 5c. Voltages given are referenced to terminal K (BIP-9201), terminal L (BIP-9203).
- 6a. The input requirements are for Negative Logic (Logic "0" more positive than Logic "1") (BIP-9201)
- 6b. The input requirements are for Positive Logic (Logic "1" more positive than Logic "0") (BIP-9203).
7. This is the current out of each input terminal when Logic "1" voltage is present there (BIP-9201); Logic "0" present (BIP-9203).
8. This is the maximum current into each input terminal when Logic "0" voltage is present there (BIP-9201); Logic "1" present (BIP-9203).
9. BCD logic levels may be any set of two levels within the limitations specified under Logic Level Separations.
10. The temperatures given apply to the module only; see Bulletin 616 for NIXIE tube temperature limits.
11. An "open circuit" (500 K min. from input terminal to common) may be used for Logic "0" (BIP-9201), Logic "1" (BIP-9203) instead of a discrete voltage.